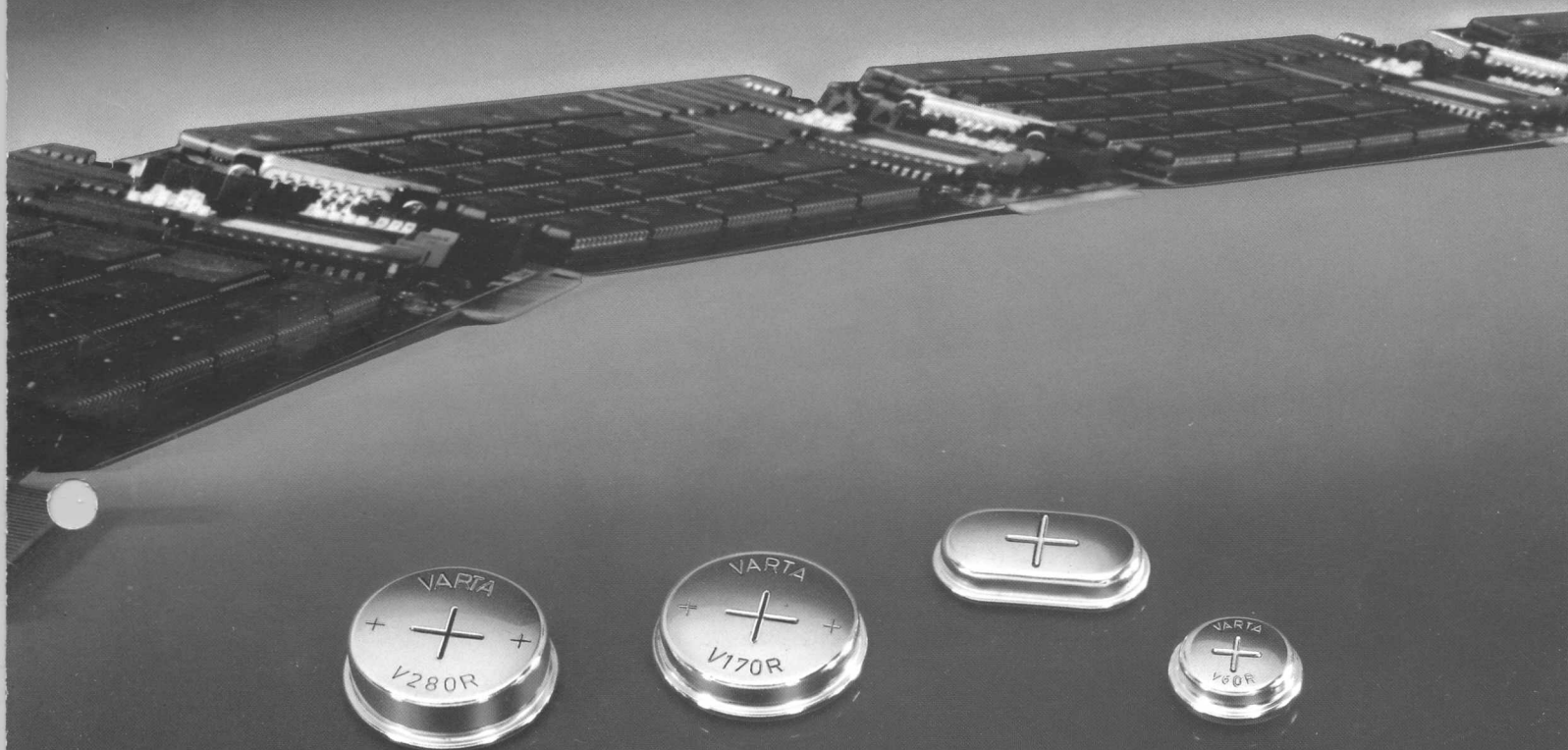


# Why don't you double your overcharge protection?



Now Varta has developed a new generation of rechargeable Ni-Cd button cells which provide extremely high overcharge protection. Even fully charged VR cells can be overcharged at room temperature up to the 0.2 CA rate without risk for one whole year. Useful life with less intensive overcharging is up to six years. They are ideally suited for "stand-by" applications.

Trickle-charge rates from 0.01 CA to 0.05 CA (0...45°C); 14 hours regular charge; and 7 hours accelerated charge. Dimensions are the same as the standard Varta DK cells.

Make your products more reliable by designing in this new, safer energy source. Order your test samples now.



## VARTA



Sealed, rechargeable  
Ni-Cd button cell

**V 60 R**

## Specification

Type.....	V 60 R
System .....	Sealed, rechargeable Ni-Cd button cell with pressure relief vent
Order-No.....	53306 101 000
Nominal Voltage.....	1.2 V
Nominal Capacity.....	60 mAh
Weight .....	4 g
Dimensions	
— diameter .....	15.5 (−0.1)
— height .....	6.0 (−0.1)
Temperature range	
— charge.....	max. 0° ... +45° C
— discharge.....	max. −20° ... +50° C
— storage.....	max. −40° ... +50° C
Recommended trickle charge.....	1.8 mA $\hat{=}$ 0.03 CA
Permissible trickle charge.....	3.0 mA $\hat{=}$ 0.05 CA continuously
Service life at trickle charge .....	4 to 6 years at 0.03 CA
Permissible overcharge .....	12 mA $\hat{=}$ 0.2 CA for one year at 20° C
Self-discharge (at 20° C).....	after 28 days storage min. available capacity 50 mAh
Capacity (at RT)	
— 0.2 CA/1.0 V.....	60 mAh
— 1 CA/1.0 V.....	36 mAh
— 2 CA/0.9 V.....	25 mAh
Battery life .....	1,000 cycles (IEC 509)

Modification reserved without notification!

Position: May, 1988



Sealed, rechargeable  
Ni-Cd button cell

## V 100 R

### Specification

Type.....	V 100 R
System .....	Sealed, rechargeable Ni-Cd button cell with pressure relief vent
Order-No.....	53310 101 000
Nominal Voltage.....	1.2 V
Nominal Capacity.....	100 mAh
Weight .....	6 g
Dimensions	
— diameter .....	25.6 (—0.20) x 14.10 (—0.20)
— height .....	5.9 (—0.25)
Temperature range	
— charge.....	max. 0° ... +45° C
— discharge.....	max. —20° ... +50° C
— storage .....	max. —40° ... +50° C
Recommended trickle charge.....	3 mA $\hat{=}$ 0.03 CA at r.t.
Permissible trickle charge.....	5 mA $\hat{=}$ 0.05 CA at r.t.
Service life at trickle charge .....	4 to 6 years at 0.03 CA
Permissible overcharge .....	20 mA, $\hat{=}$ 0.02 CA for one year at r.t.
Self-discharge (at 20° C).....	after 28 days storage min. available capacity 90 mAh
Capacity (at RT)	
— 0.2 CA/1.0 V .....	100 mAh
— 1 CA/1.0 V .....	70 mAh
— 2 CA/0.9 V .....	40 mAh
Battery life .....	1,000 cycles (IEC 509)

Modification reserved without notification!

Position: May, 1988



Sealed, rechargeable  
Ni-Cd button cell

## V 170 R

### Specification

Type.....	V 170 R
System .....	Sealed, rechargeable Ni-Cd button cell with pressure relief vent
Order-No. ....	53317 101 000
Nominal Voltage.....	1.2 V
Nominal Capacity.....	170 mAh
Weight .....	10 g
Dimensions	
— diameter .....	25.10 (—0.15)
— height .....	6.70 (—0.60)
Temperature range	
— charge.....	max. 0° ... +45° C
— discharge.....	max. —20° ... +50° C
— storage .....	max. —40° ... +50° C
Recommended trickle charge.....	5.1 mA $\hat{=}$ 0.03 CA at r.t.
Permissible trickle charge.....	8.5 mA $\hat{=}$ 0.05 CA at r.t.
Service life at trickle charge .....	4 to 6 years at 0.03 CA
Permissible overcharge .....	34 mA $\hat{=}$ 0.2 CA for one year at r.t.
Self-discharge (at 20° C).....	after 28 days storage min. available capacity 140 mAh
Capacity (at RT)	
— 0.2 CA/1.0 V .....	170 mAh
— 1 CA/1.0 V .....	150 mAh
— 2 CA/0.9 V .....	95 mAh
Battery life .....	1,000 cycles (IEC 509)

Modification reserved without notification!

Position: May, 1988



Sealed, rechargeable  
Ni-Cd button cell

## V 280 R

### Specification

Type .....	V 280 R
System .....	Sealed, rechargeable Ni-Cd button cell with pressure relief vent
Order-No. ....	53328 101 000
Nominal Voltage .....	1.2 V
Nominal Capacity .....	280 mAh
Weight .....	12 g
Dimensions	
— diameter .....	25.10 (— 0.15)
— height .....	8.8 (— 0.60)
Temperature range	
— charge .....	max. 0° ... + 45° C
— discharge .....	max. — 20° ... + 50° C
— storage .....	max. — 40° ... + 50° C
Recommended trickle charge .....	8.4 mA $\hat{=}$ 0.03 CA
Permissible trickle charge .....	max. 14 mA $\hat{=}$ 0.05 CA continuous
Service life at trickle charge .....	4 to 6 years at 0.03 CA
Permissible overcharge .....	0.2 CA' $\hat{=}$ 56 mA for one year
Self-discharge (at 20° C) .....	after 28 days storage min. available capacity 200 mAh
Capacity (at RT)	
— 0.2 CA/1.0 V .....	280 mAh
— 1 CA/1.0 V .....	140 mAh
— 2 CA/0.9 V .....	70 mAh
Battery life .....	1,000 cycles (IEC 509)

Modification reserved without notification!

Position: January, 1988